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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,920	12/23/1999	KAMERAN AZADET	10-2	8106
7590 10/24/2003				
RYAN, MASON & LEWIS, LLP 1300 POST ROAD, SUITE 205 FAIRFIELD, CT 06824				
EXAMINER PHU, PHUONG M				
ART UNIT PAPER NUMBER				
2631				

DATE MAILED: 10/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/471,920

Applicant(s)

AZADET ET AL.

Examiner

Phuong Phu

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-38 and 47-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-17 and 50-55 is/are allowed.
- 6) ☒ Claim(s) 1,3,5-12,18,21,22,24,31-38,47-49 and 56-59 is/are rejected.
- 7) ☒ Claim(s) 2,4,19,20,23 and 25-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *Interview Summary (PTOL-413)*.

**DETAILED ACTION**

1. This Office Action is responsive to the Amendment filed on 9/25/03.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 3, 5-12, 18, 21, 22 and 47-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhong et al (5,970,104), prior art of record.

As per claims 1 and 47, see figure 1 and col. 2, line 22 to col. 3, line 20, Zhong et al discloses a method and associated system using a technique wherein the method/system comprises:

step/means (120) for pre-computing branch metrics;  
step/means (120, 112) for selecting one of said pre-computed branch metrics based on a decision from a state signal (121); and

step/means (114, 123) for selecting a path having a best path metric for a given state.

As per claim 3, Zhong et al discloses that said path metric is an accumulation of said corresponding metrics overtime (see figures 2, 4 and 5, and col. 3, line 14 to col. 4, line 28 and col. 6, line 44 to col. 7, line 35).

As per claim 5, in Zhong et al, said best path metric is inherently a path metric.

As per claims 6-10, in Zhong et al, said technique can be inherently considered as a technique or an algorithm.

As per claim 11, Zhong et al discloses that said decision from a corresponding state signal (121) is symbol signal (b2, b1) (see figure 3B).

As per claim 12, Zhong et al discloses that said decision is an added-compare-select decision (see figure 1).

As per claim 18, see figures 1 and 3A, and col. 2, line 22 to col. 3, line 20 and col. 4, lines 29-62, Zhong et al discloses a method and associated system using a technique wherein the method/system comprises:

step/means (120) (see figure 1) for pre-computing branch metrics ( $I1+Q1, \dots, \sim I1+\sim Q1, I2+Q2, \dots, \sim I2+\sim Q2$ ) for each dimensional signal I and Q; and combining said branch metrics into combined branch metrics (334) (see figure 3A); and

step/means (120, 112) for selecting one of said combining branch metrics based on a decision from a state signal (121).

Claim 21 is rejected with the same reason set forth for claim 11.

Claim 22 is rejected with the same reason set forth for claim 12.

As per claims 48 and 49, Zhong et al discloses that said decision is taken form a unit (114) (see figure 1).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 24, 31-38 and 56-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhong et al.

As per claims 24, 38 and 56, as applied above for claims 1 and 47, Zhong et al discloses a method and associated system as claimed, wherein the pre-computing branch metrics step/means (120) receives input signals from channels I and Q; except that the received signal is pre-filtered before being inputted to step/means (120). However, using a filter for filtering noise and/or interference from received signal is well-known in the art, and the examiner takes Official Notice. It would have been obvious for one skilled in the art when building Zhong et al to implement a filter to filter noise and/or interference (if occurred) from received signals from channels I and Q before step/means (120) so that these noise and/or interference would not affect the performance of step/means (120). With the implementation of such a filter in Zhong et al, the memory, or namely, content of the channels, conveyed in the received signals are inherently shortened.

Claims 31-35 are rejected with the same reason set forth for claims 6-10.

Claim 36 is rejected with the same reason set forth for claim 11.

Claim 37 is rejected with the same reason set forth for claim 12.

Claim 57 is rejected with the same reason set forth for claims 48 and 49.

Claim 58 is rejected with the same reason set forth for claim 12.

As per claim 59, as applied above for claims 18, discloses a method and associated system as claimed, wherein the pre-computing branch metrics step/means (120) receives input signals from channels I and Q; except that the received signal is pre-filtered before being inputted to step/means (120). However, using a filter for filtering noise and/or interference from received signal is well-known in the art, and the examiner takes Official Notice. It would have been obvious for one skilled in the art when building Zhong et al to implement a filter to filter noise and/or interference (if occurred) from received signals from channels I and Q before step/means (120) so that these noise and/or interference would not affect the performance of step/means (120). With the implementation of such a filter in Zhong et al, the memory, or namely, content of the channels, conveyed in the received signals are inherently shortened.

***Allowable Subject Matter***

6. Claims 13-17 and 50-55 are allowed.
7. Claims 2, 4, 19, 20, 23 and 25-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

8. Applicant's arguments filed on 9/8/03 have been fully considered but they are not, in part, persuasive.

The applicant mainly argues that:

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- (i) The finality of the action set forth in the Office Action issued on 6/27/03 is pre-mature, and it should be withdrawn because the new grounds of rejection set forth in that Office Action were not necessitated by the applicant's amendments; and
- (ii) Reference Zhong et al (5,970,104), previously cited, does not teach or suggest step/means of pre-computing a branch metric, as recited in independent claims 1, 18, 24, 38, 47, 56 and 59.

Regarding to part (i), the applicant's argument is render moot. The finality of the action is now withdrawn.

Regarding to part (ii), the examiner also disagrees. The rejection to the claims is based on limitations recited in the claims wherein claims 1, 24, 47 and 56 recite step/means of "precomputing branch metrics", and claims 18, 38 and 59 recite step/means of "precomputing one-dimensional branch metrics for each dimension of the multi-dimensional signal. As per claims 1, 24, 47 and 56, see Zhong et al, figure 1 and 3A, and related texts, he discloses step/means (120) for pre-computing branch metrics wherein step/means (120) precomputes and stores possible combinations of branch metrics  $\lambda_{ik,n} + \lambda_{kj,n+1}$  (see col. 4, lines 13-62) which are used to precompute stored branch metrics (116), and step/means (120) then selects branch metrics (116) and provides them, as weights, to the ACS (114) (see col. 3, lines 10-14 and col. 6, lines 37-43). As per claims 18, 38 and 59, also see figure 1 and 3A, and related texts, he discloses step/means (120) for precomputing branch metrics  $(I1+Q1, \dots, \sim I1+Q1, I2+Q2, \dots, \sim I2+\sim Q2)$  for each dimensional signal I and Q (see col. 4, lines 29-49) and combining said branch metrics into possible combined branch metrics  $\lambda_{ik,n} + \lambda_{kj,n+1}$  (see (334) of figure 3A) which are then used to precompute stored branch metrics (116). Further, claims 1, 18, 24, 38, 47, 56 and 59 do not have other limitations to make the claimed step/means of pre-computing

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branch metrics distinguishable from Zhong et al step/means of pre-computing branch metrics.

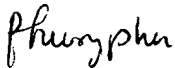
Based on the above rationale, it is believed that the limitations of claims are still met and therefore, the rejections are still maintained.

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 703-308-0158. The examiner can normally be reached on M-F (8:30-6:00) First Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 703-306-3034. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

  
Phuong Phu  
10/21/03

Phuong Phu  
Primary Examiner  
Art Unit 2631

**PHUONG PHU  
PRIMARY EXAMINER**